Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-33 (Cancelled)

34. (currently amended) A pharmaceutical composition comprising a compound having cytokinin activity and a pharmaceutically acceptable carrier in a dosage ~~form~~ effective to modulate glucose metabolism in a mammal when the composition is administered to the mammal at a concentration effective to modulate glucose metabolism, and wherein the compound is not metformin, and not a substituted N6-benzyladenosine selected from the group consisting of N6-(halobenzyl)-adenosine, N6-(alkoxybenzyl)-adenosine, N6-(alkylbenzyl)-adenosine, N6-(haloalkylbenzyl)-adenosine, and N6-(alkylmercaptobenzyl)-adenosine.

35. (previously presented) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity is selected from the group consisting of N6-benzyladenine, N6-benzyladenine hydrochloride, N6-benzyladenosine, N6-benzyladenine-3-glucoside, N6-benzyladenine-7-glucoside, N6-benzyladenine-9-glucoside, N6-benzyl-9-(2-tetrahydropyranyl)adenine, N6-benzyladenosine-5'-monophosphate, dihydrozeatin, dihydrozeatin riboside, dihydrozeatin-7-β-D-glucoside, dihydrozeatin-9-β-D-glucoside, dihydrozeatin-O-glucoside, dihydrozeatin-O-glucoside riboside, dihydrozeatin riboside-5'-monophosphate, dihydrozeatin-O-acetyl, N6-isopentenyladenine, N6-isopentenyladenosine, N6-isopentenyladenosine-5'-monophosphate, N6-isopentenyladenine-7-glucoside, N6-isopentenyladenine-9-glucoside, 2-methylthio-N6-isopentenyladenosine, 2-methylthio-N6-isopentenyladenine, 2-thio-N6-isopentenyladenine, 2-benzylthio-N6-isopentenyladenine, kinetin, kinetin riboside, kinetin-9-glucoside, kinetin riboside-5'-monophosphate, meta-topolin, meta-topolin riboside, meta-topolin-9-glucoside, ortho-topolin, ortho-topolin riboside, ortho-topolin-9-glucoside, trans-zeatin, trans-zeatin riboside, cis-zeatin, cis-zeatin riboside, trans-zeatin-7-glucoside, trans-zeatin-9-glucoside, trans-zeatin-O-glucoside, trans-zeatin-O-glucoside riboside, trans-zeatin riboside-5'-monophosphate, trans-zeatin-O-

acetyl, 2-chloro-trans-zeatin, N2-acyl-guanine, N2-acyl-guanosine, 2-methylthio-trans-zeatin, and 2-methylthio-trans-zeatin riboside.

36. (previously presented) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity comprises a moiety is selected from the group consisting of N6-benzyladenine, dihydrozeatin, N6-isopentenyladenine, 2-methylthio-N6-isopentenyladenine, 2-thio-N6-isopentenyladenine, 2-benzylthio-N6-isopentenyladenine, kinetin, meta-topolin, ortho-topolin, trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, N2-acyl-guanine, and 2-methylthio-trans-zeatin.

37. (previously presented) The pharmaceutical composition of claim 34 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

38. (previously presented) The pharmaceutical composition of claim 34 wherein the compound is present as a pharmaceutically acceptable salt, a hydrate, or in form of a prodrug.

39. (previously presented) The pharmaceutical composition of claim 35 wherein the compound having cytokinin activity is selected from the group consisting of N2-acetylguanine, N6-benzyladenine, dihydrozeatin, cis-zeatin, trans-zeatin, N6-isopentenyladenine, kinetin, and meta-topolin.

40. (previously presented) The pharmaceutical composition of claim 34, further comprising a second compound selected from the group consisting of a biguanide, a sulfonyl urea, a meglitinide, a thiazolidinedione, and a second compound having cytokinin activity.

41. (withdrawn) A method of modulating glucose metabolism in a mammal comprising a step of administering a compound according to claim 34 at a dosage effective to modulate glucose metabolism in the mammal.

42. (withdrawn) The method of claim 41 wherein the mammal is diagnosed with at least one of syndrome X, pre-diabetes, insulin resistance, type-2 diabetes, and dyslipidemia.

43. (withdrawn) The method of claim 41 wherein the administration is prophylactic administration to prevent at least one of Syndrome X, pre-diabetes, insulin resistance, type-2 diabetes, and dyslipidemia.

44. (withdrawn) The method of claim 41 wherein modulating glucose metabolism in a mammal comprises increasing glucose uptake in a muscle cell.

45. (withdrawn) The method of claim 41 wherein modulating glucose metabolism in a mammal comprises decreasing gluconeogenesis in a hepatocyte.

46. (withdrawn) The method of claim 41 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

47. (withdrawn) A method of modulating lipid metabolism in a mammal that comprises a step of administering a compound according to claim 34 at a dosage effective to modulate glucose metabolism in the mammal, and wherein the compound is not N6-aralkyladenosine.

48. (withdrawn) The method of claim 47 wherein the mammal is diagnosed with at least one of Syndrome X and dyslipidemia.

49. (withdrawn) The method of claim 47 wherein the administration is prophylactic administration to prevent at least one of Syndrome X and dyslipidemia.

50. (withdrawn) The method of claim 47 wherein modulating lipid metabolism in a mammal comprises at least one of decreasing total serum cholesterol, decreasing serum LDL-cholesterol, and decreasing serum triglycerides.

51. (withdrawn) The method of claim 47 wherein the compound having cytokinin activity is selected from the group consisting of trans-zeatin, cis-zeatin, trans-zeatin-O-acetyl, 2-chloro-trans-zeatin, and 2-methylthio-trans-zeatin, and wherein the compound is optionally covalently bound to a sugar.

52. (withdrawn) A method of performing an analytic test in a mammal comprising:

determining a concentration of a compound according to claim 34 in a biological fluid; and

correlating the concentration with at least one of a likelihood and presence of a metabolic disorder, wherein the disorder is selected from the group consisting of pre-diabetes, insulin resistance, type-2 diabetes, syndrome X, and dyslipidemia.

53. (withdrawn) The method of claim 52 wherein a decrease in the concentration of the compound is associated with an increased likelihood or presence of the metabolic disorder.